TEAM 0.5 DRIVER'S LICENSE USER_____

I. BASIC LICENSE

1. Safety

- ☐ Understand emergency shut-down procedure
- ☐ Demonstrate handling of the column valves
- ☐ Point out where emergency contact numbers are posted
- ☐ Know how NCEM staff for support can contacted

2. Prepare the instrument for your session

- ☐ Show how to check basic vacuum functionality and target pressure values (Gun: 1, Liner: 18-20 and Octagon: < 10)
- ☐ Check Gun operate "ON" and extraction voltage "4500V"
- ☐ Demonstrate the proper settings of monochromator focus and gun lens.
- ☐ Check instrument status (TEM/STEM, image/diffraction, accelerating voltage, etc.)
- ☐ Show which software needs to run to control which functionality

3. Pre-setup

- ☐ Explain strategies to find the beam if not present
- ☐ Demonstrate sample manipulation by using the Compustage
- ☐ Demonstrate procedure to find eucentric height of the sample
- ☐ Show electron-optical alignment procedures for "Direct Alignments" and "Stigmators"
- ☐ Demonstrate handling and choice of the CL2 aperture

4. Daily (basic) TEM operation

- ☐ Demonstrate how to set and align the TEM illumination (2-condenser lens mode)

5. Daily (basic) STEM operation

- ☐ Demonstrate how to set and align the STEM illumination (3-condenser lens mode)

6. Closing the session

- ☐ Set TEM mode if different
- ☐ Set magnification at x10K
- ☐ Close column valve
- ☐ Complete log book

Instructor_____Date_____

II. INTERMEDIATE LICENSE

7. Image corrector fine tuning

- ☐ Apply basic alignment on a cross-grating specimen
- ☐ Demonstrate how to set instrument conditions for tuning of the image corrector (magnification, illumination set up, defocus etc.)
- ☐ Know target values of aberration coefficients, e.g. A1, B2 etc.
- ☐ Demonstrate iterative tuning procedure using the corrector control software

8. Probe corrector fine tuning

- ☐ Apply basic alignment on a cross-grating specimen
- ☐ Demonstrate how to set instrument conditions for tuning of the illumination corrector

(magnification, illumination set up, defocus etc.)
☐ Know target values of aberration coefficients, e.g. A1, B2 etc.
☐ Demonstrate iterative tuning procedure using the corrector control software

Instructor_____Date_____

III. EXPERT LICENSE

9. Monochromator setting

☐ Demonstrate how to set up, align and optimize a monochromator setting
☐ Show procedure to form a monochromated illumination for TEM
☐ Demonstrate procedure to form a monochromated STEM probe

10. GIF tuning

☐ Align the energy filter for spectroscopy and filtered imaging

11. Daily HREELS operation

☐ Demonstrate the procedure to optimize the energy resolution by manually minimizing spectrometer aberrations and 60 Hz interferences using the streak-imaging technique

Instructor_____Date_____